# Nurses' Role in Preventing Prescription Opioid Diversion

Practical steps can help reverse this public health crisis.

**OVERVIEW:** Prescription opioid abuse is at epidemic levels. Opioids diverted from friends and family members who have legitimate prescriptions are a major source of abused prescription opioids. Nurses are vital to any effort to combat this public health crisis because they have the opportunity to provide essential anticipatory guidance every time a patient receives prescription medication. The purpose of this article is to inform nurses of the magnitude of opioid diversion, the nonmedical use of opioids, and opioids' inappropriate disposal. The authors propose three potential interventions in which nurses can play a critical role: teaching patients about the risks of opioid diversion, providing patients with information on the safekeeping and proper disposal of opioids, and tracking patients' analgesic use to improve our knowledge of prescription analgesic requirements for pain management. Nurses are in an ideal position to help reverse the occurrence and potentially fatal consequences of prescription opioid diversion.

**Keywords:** drug diversion, opioid abuse, opioid addiction, opioid misuse, prescription opioids, substance use disorders

Prescription opioid diversion, misuse, abuse, and addiction are at epidemic levels.[1,2] (For definitions of these and other terms used in this article, see *Terms and Operational Definitions*.[3-6]) Legislative attempts to address this crisis have historically focused on educating prescribers and restricting access to prescription opioids. While these efforts may reduce the availability of opioids for nonmedical use, they also create substantial barriers for patients who need these medications for legitimate pain treatment.[7,8]

Nurses are well positioned to address the significant public health problem of opioid diversion. Legislative and policy endeavors have so far failed to identify nurses' potential role in reducing opioid diversion through patient education and medication monitoring.

In this article, we discuss the magnitude of the problems of diversion, nonmedical use, and inappropriate storage and disposal of prescription opioids. We propose three areas in which nurses can make a substantial difference in helping prevent opioid diversion

By Renee C. B. Manworren, PhD, RN, APRN-BC, PCNS-BC, FAAN, and
Aaron M. Gilson, PhD, MSSW


More than 800 pounds of drugs have been collected in Lycoming County, Pennsylvania, since drug collection boxes were placed in law enforcement agencies over a year ago, allowing residents to safely dispose of unwanted drugs. Here the drugs are separated from their containers before incineration. Photo courtesy of Karen Vibert-Kennedy / Williamsport Sun-Gazette.

and nonmedical use, while outlining information nurses can impart to patients. We also argue for an expansion of nurses' monitoring role to include the authority to access and track data from their state's prescription drug monitoring program (PDMP), which would both help prevent diversion and increase their knowledge of prescription analgesic requirements for pain management.

## THE SCOPE OF OPIOID DIVERSION AND ITS NEGATIVE EFFECTS

To our knowledge, there has been no recent, comprehensive, systematic effort to compile diversion data. However, a 2005 study that analyzed Drug Enforcement Administration data from 22 Eastern states between 2000 and 2003 found that nearly 28 million dosage units of controlled substances were diverted in those states over that period, with six opioids (oxycodone, morphine, methadone, hydromorphone, meperidine, and fentanyl) representing nearly a quarter (roughly 6.5 million) of those dosage units.[9]

According to the National Institute on Drug Abuse, a division of the National Institutes of Health, nearly 71% of diverted prescription drugs are obtained from a friend or relative, either for free (54.2%) or through theft or purchase (16.6%).[10] In 2013, 2.8 million people ages 12 and older reported using an illicit drug for the first time over the preceding 12 months; nearly 20% of these cases involved the nonmedical use of prescription drugs, close to 60% of which were pain relievers.[11]

In 2011, 488,004 ED visits involved patients who had taken opioid analgesics.[12] A trend analysis of estimates from the Drug Abuse Warning Network covering 2004 through 2011 showed a 183% increase in the rate of opioid-related ED visits for all age groups over 17 years. Among opioid analgesics, hydromorphone products accounted for the greatest increase in ED visits—from 3,385 in 2004 to 18,224 in 2011 (438%), though the frequency of ED visits also rose during this period for oxycodone (by 263%), morphine (146%), hydrocodone (107%), fentanyl (104%), and methadone (82%). ED visits related to the use of drugs classified as unspecified prescription opioids increased by 334% (from 31,864 visits in 2004 to 138,130 in 2011).

Inappropriate use of opioids for any reason can result in overdose and death. In 2013, of the 43,982

## Terms and Operational Definitions[3-6]

Terms such as nonmedical use, misuse, and others are used inconsistently in both professional literature and popular media. Below, we list the definitions used in this article.

**Abuse**–Use of a drug for nontherapeutic, recreational purposes (psychotropic or euphoric effects).
**Addiction**–A primary chronic neurobiologic disease of reward, motivation, and memory, characterized by the "four Cs": **C**ompulsive use, impaired **C**ontrol over use, **C**ontinued use despite harm, and strong **C**raving.
**Drug diversion**–The illicit redirection of legitimately prescribed drugs.
**Misuse**–Use of a drug prescribed for a medical purpose in a manner inconsistent with its intended purpose or prescribed use.
**Nonmedical use**–Use of a prescription drug

- by someone other than the person for whom it was prescribed.
- in a manner for which it was not prescribed—for example, to achieve a euphoric effect, increasing the dose without prescriber approval, unknowingly taking a larger dose than directed (misuse), or using the drug to attempt suicide or to make a suicidal gesture without really intending to commit suicide.

**Substance use disorder**–A maladaptive pattern of substance use leading to clinically significant impairment or distress, as demonstrated by a recurrence of two or more of the following events or behaviors within a year:

- failure to fulfill major role obligations
- hazardous use (of the substance or other substances, or of a motor vehicle while under the influence, for example)
- physiologic symptoms of withdrawal
- tolerance
- increasing use, or use over a longer period of time than intended
- unsuccessful attempts to quit or control use
- physical or psychological problems related to use
- investment of time in obtaining, using, and recovering from the substance
- cessation of activities to allow for use
- craving
- continued use despite social or interpersonal problems related to use

drug overdose deaths that occurred in the United States, 16,235 involved opioids.[13] This does not necessarily mean that an opioid caused the death, but that the death was classified as a drug poisoning and an opioid was present in the body at death. Risk of overdose is elevated when opioid and sedative–hypnotic prescriptions overlap, and risk of fatal overdose rises with the number of prescriptions, prescribers, and pharmacies.[14] According to the Centers for Disease Control and Prevention, for every death associated with prescription painkillers, there are 10 substance abuse treatment admissions, 32 ED visits for misuse or abuse, 130 people who abuse or are addicted, and 825 nonmedical users.[13]

### NURSES' ROLE IN INTERVENTION

As trusted patient and family educators, nurses are well positioned to help reduce the occurrence and potentially fatal consequences of prescription opioid diversion. Nurses have the opportunity to provide patients with anticipatory guidance related to prescription medications, teaching them about the risks of opioid diversion and providing information on the safekeeping and proper disposal of opioids that are no longer needed. By tracking patients' analgesic use, nurses can also improve our knowledge of prescription analgesic requirements for pain management (see *Nursing Interventions*).

Given the apparent degree of opioid diversion in this country, it is essential for nurses to teach patients about the risks of nonmedical opioid use. Research indicates that nurses tend to warn patients prescribed acetaminophen–opioid combination drugs not to take additional acetaminophen.[15] Nurses also teach patients to take all of their prescription antibiotics to help reduce bacterial drug resistance. They do not, however, routinely teach patients how to secure and dispose of prescribed controlled substances—and, according to findings released by the Partnership for Drug-Free Kids, only one in five prescribers consistently provides such information to patients.[16]

Current clinical practice standards[17-19] advise clinicians to consult with a pain management or addiction medicine specialist when treating patients with pain who have a history of addiction or substance use, and to arrange for more frequent adherence monitoring—a practice reinforced by the Federation of State Medical Boards.[20] If a patient is under the care of a psychiatrist or psychologist, that person should be on the care team as well. But, since it is difficult to reliably identify the patients who will divert, misuse, or become addicted to prescription opioids, nurses should address these issues with all patients—an approach that has been termed a "universal precaution" method of diversion prevention.[21, 22] Although standardized risk assessment tools and risk stratification strategies have been recommended,[19] none are foolproof.

**Teach patients about the risks of opioid diversion and nonmedical use.** Key teaching points are as follows:

- Prescription medications should be taken only as prescribed. They should not be used for reasons other than those for which they are prescribed (for example, opioids should not be used to relax or to facilitate sleep).
- Medications are prescribed for only one person's use. They should not be used by anyone other than the patient, even for the same indication. Taking or sharing prescription medication is not only potentially dangerous, but it is also a federal crime in violation of the Controlled Substances Act.

- Prescription medications, especially controlled substances, should be secured (that is, available for use only by the person to whom they were prescribed) to prevent diversion.

The majority of diverted opioids are obtained from friends and family members with legitimate prescriptions.[11] Educational efforts directed at patients and their family members should encourage them to safeguard and monitor such medications. This strategy is reinforced by the Office of National Drug Control Policy and the U.S. Drug Enforcement Administration (DEA). The Partnership for Drug-Free Kids (www.drugfree.org) and its Medicine Abuse Project (http://medicineabuseproject.org/what-you-can-do/safeguard-your-home) highlight three steps to minimize the potential for prescription controlled substance diversion: monitor, secure, and dispose. This approach is believed to be effective in deterring adults from becoming "unintentional enablers" by leaving medications vulnerable to pilferage or loss. Nurses should consistently share these steps with patients of all ages.

**Provide controlled substance disposal education.** In a clinical practice setting, medication documentation and reconciliation often requires patients to bring their prescriptions with them when visiting their health care provider. Such visits give nurses an opportunity to instruct patients to dispose of prescribed pain medications as soon as they are no longer needed and to provide information on safe and convenient disposal methods. The DEA identifies certain medications, including opioids, as especially harmful because a single dose can be fatal if taken by someone other than the patient for whom the medication was prescribed. Disposal instructions for such medications often specify flushing them down a sink or toilet. The U.S. Environmental Protection Agency, however, has cautioned against flushing medications in order to avoid water supply contamination, and the advice of the U.S. Food and Drug Administration (FDA) has adopted similar language—the FDA now recommends disposal through flushing only when the medication "cannot be disposed of through a medicine take-back program."[23]

On September 25, 2010, the DEA authorized the first national prescription drug take-back day, which allowed patients to anonymously drop off medications that were expired, unused, or unwanted for safe disposal by law enforcement at designated sites.[24] The initiative was successful and a series of take-back days followed. In the fall of 2014, the DEA discontinued nationwide take-back events to avoid competing with local take-back efforts.[25] Since then, similar events have been conducted by local communities in accordance with federal regulations, and a number of alternative take-back options now exist, including DEA-authorized medication drop boxes, many of which are located in police department lobbies and accessible 24 hours a day, seven days a week.

## Nursing Interventions

**Three ways nurses can help prevent opioid diversion and nonmedical use.**

**Educate patients on the risks of opioid diversion.** The majority of drug diversion takes place among friends and family.

**Provide controlled substance disposal education.** Disposal instructions are available at:
- http://1.usa.gov/1eq6jVz

You may also search for local controlled substance disposal locations at:
- http://1.usa.gov/1SQJE7r
- http://rxdrugdropbox.org
- www.americanmedicinechest.com

**Track opioid use for acute and chronic pain conditions.** For all patients prescribed opioids, monitor pain diaries, pill counts, and if permitted by state law, your state's prescription drug monitoring program. For patients on long-term opioid therapy, conduct random drug screens.

To increase the opportunities for secure controlled substance disposal by patients, the DEA adopted a new rule as of October 9, 2014.[26] Although this rule continues to forbid health care providers from taking back and disposing of their patients' prescription medications, it permits retail pharmacies to provide collection receptacles for prescription drug take-back services.[27,28] (Because pharmacy involvement remains voluntary, this drug disposal option may not be available to all patients.)

*An opportunity for data collection.* Community take-back days and drop boxes are valuable tools to reduce the harmful public health consequences of unused medications, and their use is becoming more common. Ideally, such interventions would be consistently coupled with a data collection component that recorded the amounts of specific medications returned. Unfortunately, this seldom occurs.

One such successful data collection effort was conducted in Dane County, Wisconsin. A single, four-hour take-back event yielded the return of nearly 14,500 dosage units of Schedule II and III opioids.[29] Data obtained through such initiatives could help health care professionals, policymakers, and public health officials better understand the extent to which unused opioid medications are available for illicit purposes. Short-acting opioid medications, such as codeine, hydrocodone, and oxycodone products, accounted for about 82% of all returned prescriptions.[29] The most important predictor of the amount returned was the amount prescribed. Such findings suggest that the DEA's 2007 amended rule allowing

## Home Use of Prescription Opioids by Children After Appendectomy

**A recent research effort.**

In an effort to learn about children's use of prescription opioids following appendectomy, researchers including one of us (RCBM) investigated prescription pain medications prescribed for 93 patients and dispensed with eCap technology (Information Mediary Corporation, Ottawa, Ontario, Canada), which records every time the medication container is opened but not the number of pills removed.[38, 39] In addition, investigators asked patients to track pain medication use in diaries for up to 14 days. Patients and parents were instructed to bring their unused prescription pain medication and their diaries to their postoperative clinic appointments. Medication use and diary accuracy were verified by pill count and data extraction from the eCap. Only 39 patients returned both their diaries and eCap data; 10 provided partial data.

Although patients and parents were told that eCap data would be used to verify diary entries, findings suggested aberrant use and possible diversion. For example, there were discrepancies between the diary entries, the eCap data, and pill counts. In one case, the state's prescription drug monitoring program indicated that a drug was dispensed on the day of hospital discharge in the name of a child whose family reported not filling the prescription. There were also unexplained late pill bottle openings, all of which occurred on a Friday, Saturday, or Sunday.

Of the 749 pills prescribed to the 49 patients who returned diaries and eCap data, 689 pills were dispensed, 167.5 pills (24.31%) were reportedly used for the reason prescribed, 53.5 pills (7.76%) were unaccounted for by pill count, and 468 pills (67.92%) were returned to families for disposal. Patients were prescribed on average 15 opioid-containing pills (the range was five to 45) and used on average only 5.8 (the range was zero to 20 by pill count and zero to 24 by diary report) to treat postoperative pain. In other words, more controlled substances were returned to families for disposal than were used by pediatric patients to treat postoperative pain.

prescribers to provide patients with a 90-day supply of Schedule II controlled substances through sequential prescriptions[30]—with each possibly specifying fewer dosage units—may be a useful means of reducing drug diversion. Clinicians should note that, although sequential prescribing is permitted under federal law, fewer than half the states have adopted such laws. Prescribers must check state laws and facility policies to determine conformity to the regulatory requirements before instituting this practice.

**Track opioid use.** There is no accepted standard for monitoring opioid use, especially short-term use for acute painful conditions. To reduce the potential for drug diversion, the FDA recommends monitoring the adherence of all patients receiving extended-release and long-acting opioids through the use of PDMPs, when practical, and random drug screening, when indicated.[19] At press time, PDMPs were operational in the District of Columbia and in all but two states—Missouri and Nebraska. PDMPs allow users (most often, prescribers and dispensers; far less frequently, authorized delegates) to track prescribed controlled substances that are dispensed to patients. Prescriptions obtained from multiple practitioners or dispensed from a variety of pharmacies are indications of possible diversion or nonmedical use.

There is tremendous variability among state PDMPs regarding the administering agency; the health care, regulatory, and law enforcement personnel who can access patient information; the method and frequency with which prescribing information is reported and made available to users; and ease of use.[31] To promote consistency of PDMP functions, a number of organizations have issued documents outlining recommended program characteristics, including the following[32-34]:

- real-time data submission
- data access at the point of care
- integration with the electronic health record
- interstate data sharing
- expanded user access to data, including the authorization of delegates
- data security and confidentiality maintenance
- user education
- development of valid patient risk scoring methods

Expanding nursing authority to access data from state PDMPs remains vital—especially in the role of a delegate if the nurse does not have prescribing privileges.

*Random urine drug screening* is recommended for patients who are at high risk for abuse or misuse. Screening can help practitioners ensure that prescribed drugs are being used by the intended patient, and that illegal or diverted drugs are not being used by patients receiving controlled substance prescriptions. Research on urine drug screening reveals that patients with a family history of substance use or psychiatric disorders are at elevated risk for substance use disorders.[35, 36] Identification of patients with these characteristics can help guide the use of urine drug screening throughout

treatment.[17] It should be noted, however, that there is no evidence that screening improves clinical outcomes or clinicians' ability to identify aberrant drug-related behaviors or diversion.[17] A number of additional factors should be considered when using urine drug screening, including costs (with the cost of a screening test followed by a confirmatory test ranging from $250 to $1,400, depending on the number of substances tested and methods used[37]) and testing sensitivity and specificity; clinicians should also know the substances for which their particular laboratory screens and does not screen and the legitimate drugs that can interfere with the accuracy of results.

Just as nurses' access to PDMP data and use of random urine drug screening may be helpful in identifying potential and actual diversion or nonmedical use of opioid analgesics, nurses are also in an ideal position to help determine the amount of opioid analgesics typically required for common painful conditions. Redundant monitoring methods, such as medication diaries and pill counts, are helpful in determining home use of controlled substances. When caring for patients with a known history of substance abuse, including patients in long-term recovery, nurses can encourage a trusted family member to monitor medication use. Such interventions are within nurses' scope of practice and facilitate discussion and patient education regarding prescription use, medical misuse, diversion, and proper security and disposal of prescribed controlled substances.

**There is no accepted standard for monitoring opioid use.**

## ENSURING SAFE AND EFFECTIVE ANALGESIC PRACTICES

There are huge gaps in our knowledge regarding the quantity of opioid analgesics needed to treat painful conditions. We need further data to help guide safe and effective prescribing practices, while reducing the potential for diversion by limiting opioids prescribed for home use to those necessary to treat patient pain (see *Home Use of Prescription Opioids by Children After Appendectomy*[38, 39]).

Unlike abused illicit substances, prescription opioids have legitimate therapeutic uses, and their availability for analgesic purposes needs to be maintained. Efforts to address prescription opioid abuse and diversion must acknowledge the role that legitimately issued prescriptions play in these public health crises, and practitioners must strive to safeguard against abuse and diversion when opioid medications are prescribed.

Although health care professionals recognize the risks of opioid use, patients often do not. Patient education on potential dangers of diversion, medication security, and proper disposal, as well as monitoring efforts, is critical in reducing prescription opioid diversion. Such efforts require nurses to take full advantage of opportunities to provide anticipatory guidance and closely monitor patient opioid use through the means permitted by state law and institutional policy. ▼

For 23 additional continuing nursing education activities on topics related to addiction, go to www.nursingcenter.com/ce.

*Renee C. B. Manworren is a nurse scientist in the Division of Pain and Palliative Medicine at Connecticut Children's Medical Center in Hartford. Aaron M. Gilson is director of the U.S. Program at the Pain and Policy Studies Group, a division of the Paul P. Carbone Cancer Center in the School of Medicine and Public Health, University of Wisconsin–Madison. Contact author: Renee C. B. Manworren, rmanworren@connecticutchildrens.org.*
*The authors and planners have disclosed no potential conflicts of interest, financial or otherwise.*

## REFERENCES

1. Center for Behavioral Health Statistics and Quality. *Drug abuse warning network methodology report, 2011 update*. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2013 Apr. http://www.samhsa.gov/data/sites/default/files/DAWN2k11ED/DAWN2k11ED/rpts/DAWN2k11-Methods-Report.htm.
2. Manchikanti L, et al. Opioid epidemic in the United States. *Pain Physician* 2012;15(3 Suppl):ES9-ES38.
3. American Society of Addiction Medicine. *Definition of addiction* 2011. http://www.asam.org/for-the-public/definition-of-addiction.
4. Hasin DS, et al. DSM-5 criteria for substance use disorders: recommendations and rationale. *Am J Psychiatry* 2013;170(8):834-51.
5. O'Connor AB, et al. Abuse liability measures for use in analgesic clinical trials in patients with pain: IMMPACT recommendations. *Pain* 2013;154(11):2324-34.
6. Smith SM, et al. Classification and definition of misuse, abuse, and related events in clinical trials: ACTTION systematic review and recommendations. *Pain* 2013;154(11):2287-96.
7. Burris S, Davis CS. *A blueprint for reforming access to opioid medications: entry points for international action to remove the policy barriers to care and treatment*. Rochester, NY: Social Science Research Network; 2009 Mar 10. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1356815.
8. World Health Organization. *Ensuring balance in national policies on controlled substances: guidance for availability and accessibility of controlled medicines*. Geneva, Switzerland; 2011. http://www.who.int/medicines/areas/quality_safety/GLs_Ens_Balance_NOCP_Col_EN_sanend.pdf.
9. Joranson DE, Gilson AM. Drug crime is a source of abused pain medications in the United States. *J Pain Symptom Manage* 2005;30(4):299-301.
10. Jones S, et al. *Popping pills: prescription drug abuse in America*. Bethesda, MD: National Institute on Drug Abuse;

2014. http://www.drugabuse.gov/related-topics/trends-statistics/infographics/popping-pills-prescription-drug-abuse-in-america.

11. Substance Abuse and Mental Health Services Administration (SAMHSA). *Results from the 2013 national survey on drug use and health: summary of national findings*. Rockville, MD; 2014. NSDUH Series H-48, HHS; Publication No. (SMA) 14-4863. http://www.samhsa.gov/data/sites/default/files/NSDUHresultsPDFWHTML2013/Web/NSDUHresults2013.pdf.
12. Substance Abuse and Mental Health Services Administration (SAMHSA). *Drug abuse warning network, 2011: national estimates of drug-related emergency department visits*. Rockville, MD; 2013. HHS Publication No. (SMA) 13-4760, DAWN Series D-39. http://archive.samhsa.gov/data/2k13/DAWN2k11ED/DAWN2k11ED.htm.
13. Centers for Disease Control and Prevention. *Policy impact: prescription painkiller overdoses*. 2011. http://www.cdc.gov/homeandrecreationalsafety/rxbrief.
14. Paulozzi LJ, et al. A history of being prescribed controlled substances and risk of drug overdose death. *Pain Med* 2012;13(1):87-95.
15. Manworren R. *Pediatric nurses' journeys to relieve children's post-operative pain* [dissertation]. Arlington, TX: University of Texas at Arlington; 2010.
16. Partnership for Drug-Free Kids. New research uncovers disconnect in pain-related communications between prescribers of pain medications and patients [press release]. 2015 Apr 29. http://www.drugfree.org/newsroom/new-research-uncovers-disconnect-pain-related-communications-prescribers-pain-medications-patients.
17. Chou R, et al. Clinical guidelines for the use of chronic opioid therapy in chronic noncancer pain. *J Pain* 2009;10(2):113-30.
18. Oliver J, et al. American Society for Pain Management nursing position statement: pain management in patients with substance use disorders. *Pain Manag Nurs* 2012;13(3):169-83.
19. U.S. Food and Drug Administration. *FDA blueprint for prescriber education for extended-release and long-acting opioid analgesics*. Silver Spring, MD; 2014 Dec. http://www.fda.gov/downloads/Drugs/DrugSafety/InformationbyDrugClass/UCM277916.pdf.
20. Federation of State Medical Boards (FSMB). *Model policy on the use of opioid analgesics in the treatment of chronic pain*. Washington, DC; 2013 Jul. http://www.fsmb.org/Media/Default/PDF/FSMB/Advocacy/pain_policy_july2013.pdf.
21. Gourlay DL, et al. Universal precautions in pain medicine: a rational approach to the treatment of chronic pain. *Pain Med* 2005;6(2):107-12.
22. Webster LR, Fine PG. Approaches to improve pain relief while minimizing opioid abuse liability. *J Pain* 2010;11(7):602-11.
23. U.S. Food and Drug Administration. *Disposal of unused medicines: what you should know*. 2015. http://www.fda.gov/Drugs/ResourcesForYou/Consumers/BuyingUsingMedicineSafely/EnsuringSafeUseofMedicine/SafeDisposalofMedicines/ucm186187.htm.
24. Pharmaceutical Research and Manufacturers of America (PhRMA). PhRMA statement on support of DEA national take back day [press release]. 2010 Sep 23. http://www.phrma.org/media/releases/phrma-statement-support-dea-national-take-back-day.
25. U.S. Department of Justice, Drug Enforcement Administration. *Drug disposal information*. 2014. http://www.deadiversion.usdoj.gov/drug_disposal.
26. Department of Justice, Drug Enforcement Administration. 21 CFR Parts 1300, 1301,1302, 1304, et al. Disposal of controlled substances; final rule. Washington, DC: Federal Register Sep 9, 2014 53520-70.
27. Drug Enforcement Agency, Office of Diversion Control. *Secure and Responsible Drug Disposal Act of 2010 ("Disposal Act"). Disposal act: general public fact sheet*. Springfield, VA: U.S. Department of Justice; 2014 Sep 8. http://www.deadiversion.usdoj.gov/drug_disposal/fact_sheets/disposal_public.pdf.
28. Drug Enforcement Agency, Office of Diversion Control. *Secure and Responsible Drug Disposal Act of 2010 ("Disposal Act"). Disposal regulations: registrant fact sheet*. Springfield, VA: U.S. Department of Justice 2014 Sep 8. http://www.deadiversion.usdoj.gov/drug_disposal/fact_sheets/disposal_registrant.pdf.
29. Welham GC, et al. Type and frequency of opioid pain medications returned for disposal. *Drugs Real World Outcomes* 2015;2(2):129-35.
30. U.S. Department of Justice, Drug Enforcement Administration. 21 CFR Part 1306 [Docket no. DEA-287F]. Issuance of multiple prescriptions for schedule II controlled substances. Washington, DC 2007.
31. Clark T, et al. *Prescription drug monitoring programs: an assessment of the evidence for best practices*. Waltham, MA: Prescription Drug Monitoring Program Center of Excellence, Heller School for Social Policy and Management, Brandeis University; 2012 Sep 20. http://www.pdmpexcellence.org/sites/all/pdfs/Brandeis_PDMP_Report_final.pdf.
32. MITRE Corporation. *Enhancing access to prescription drug monitoring programs using health information technology: work group recommendations*. McLean, VA; 2012 Aug 17. http://www.healthit.gov/sites/default/files/pdmp_work_group_recommendations-1.pdf.
33. National Alliance for Model State Drug Laws. *Components of a strong prescription monitoring program*. Charlottesville, VA; 2012 Jun. http://www.namsdl.org/library/85740FEB-19B9-E1C5-31AA3E9A59034388.
34. Prescription Monitoring Program Center of Excellence. *PMP Center of Execellence briefing: best practices for prescription monitoring programs*. Waltham, MA: Brandeis University, Institute of Behavioral Health; 2012. http://www.pdmpexcellence.org/sites/all/pdfs/COE_BriefingOnBestPractices_final_april_2012.pdf.
35. Edwards RR, et al. Elevated pain sensitivity in chronic pain patients at risk for opioid misuse. *J Pain* 2011;12(9):953-63.
36. Manubay JM, et al. Prescription drug abuse: epidemiology, regulatory issues, chronic pain management with narcotic analgesics. *Prim Care* 2011;38(1):71-90, vi.
37. Christo PJ, et al. Urine drug testing in chronic pain. *Pain Physician* 2011;14(2)123-43.
38. Manworren R, et al. Adolescents' home pain management after laparoscopic appendectomy: unexpected findings [poster abstract]. *Journal of Pain* 2013;14(4):S38.
39. Karamessinis L, et al. Adolescents' home pain management after laparoscopic appendectomy [poster abstract]. *Journal of Pain* 2015;16(4):S79.